

**REMARKS**

Claims 1-59 are pending in the application. The Office action objected to claim 37; rejected claims 9, 24, 28, 29, 37, and 59 under 35 U.S.C. § 112 first paragraph as allegedly being not enabled; rejected claims 7 and 40 under 35 U.S.C. § 112 second paragraph as being indefinite for allegedly using trademarks; rejected claims 1-59 under 35 U.S.C. § 112 second paragraph as being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; rejected claims 1-15, 21, 25-28, 30-39, 41-52 and 58 under 35 U.S.C. § 103(a) as being unpatentable over Pelech et al. (Pelech, U.S. Patent No. 6,243,585) in view of Campbell (Campbell, U.S. Patent No. 6,167,263); and rejected claim 20 as being unpatentable over Pelech in view of Campbell and further in view of Richetta et al. (Richetta, U.S. Patent No. 5,499,237). The applicants respond as follows.

**CLAIM OBJECTION**

Claim 37 was objected to as depending from itself. Claim 37 has been amended to depend from independent claim 35. The applicants request the objection be removed.

**SECTION 112 FIRST PARAGRAPH REJECTIONS**

The examiner rejected claims 9, 24, 28, 29, 37, and 59 under 35 U.S.C. § 112 first paragraph as allegedly being not enabled. The applicants respectfully traverse.

The applicants state that one of ordinary skill at the time of the invention would have known or been aware of at least the following items related to aspects of the current disclosure. Regarding claims 2, 28 and 37, A System of Mesoscale Biomimetic Roboswimmers for Exploration and Search for Life on Europa by Thomas W. Vaneck as presented to NASA Institute for Advanced Concepts (NIAC), NASA Goddard Space Flight Center on 6 June 2000 presents classes of autonomous roboswimmers that can self-organize and cooperate in assigned tasks. (see attached IDS)  
([http://niac.usra.edu/files/library/fellows\\_mtg/jun00\\_mtg/pdf/445Vaneck.pdf](http://niac.usra.edu/files/library/fellows_mtg/jun00_mtg/pdf/445Vaneck.pdf))

With respect to claims 29 and 59, a publication from the University of California at Berkeley from late 2000 states,

“The goal of the micromechanical flying insect (MFI) project is to develop a 25 mm (wingtip-to-wingtip) device capable of sustained autonomous flight. The MFI is designed based on biomimetic principles to capture some of the exceptional flight performance achieved by true flies. The high performance of true flies is based on large forces generated by non-steady state aerodynamics, a high power-to-weight ratio motor system, and a high-speed control system with tightly integrated visual and inertial sensors. Our design analysis shows us that piezoelectric actuators and flexible thorax structures can provide the needed power density and wing stroke, and that adequate power can be supplied by lithium batteries charged by solar cells.

The MFI project started in May 1998. In the first 3 years of this MURI grant, research concentrated on understanding fly flight aerodynamics and on analysis, design and fabrication of MFI actuators, thorax and wings. In August 2001, our MFI prototype (with 1 wing) showed thrust forces on a test stand.” (<http://robotics.eecs.berkeley.edu/~ronf/mfi.html>):

This is clear evidence that one of ordinary skill in the art at the time of the invention would have known about micromechanical flying, swimming or crawling insects.

With respect to construction of a transceiver of small size, the following is a Texas Instrument press release dated September 2000:

“Texas Instruments Unveils Flashless Bluetooth Chipset

Integration, System Architecture and Advanced Process Technology Enhances Performance, Eliminates External Memories, and Enables the First \$5 Bluetooth Chipset

DALLAS (September 18, 2000) -- The ability to wirelessly connect consumer electronic equipment such as data-enabled mobile phones, Personal Digital Assistants, home networking hubs, printers and computers will become a reality as Texas Instruments (NYSE: TXN) (TI), the world leader in digital signal processing (DSP) and analog, today announced the availability of its complete, high-performance Bluetooth chipset. The chipset solution includes the industry's first 0.18

Micron (um) ROM-based Bluetooth baseband with a fully integrated Bluetooth software stack and TI's high sensitivity BiCMOS radio frequency (RF) transceiver. With this technology, TI is able to deliver a highly integrated, high performance solution, with the price point required, to enable widespread adoption of Bluetooth.

... TI's BSN6030 offers a ROM-based Bluetooth baseband controller including a fully integrated Bluetooth software stack up to the HCI interface. Designed using TI's advanced 0.18 micron CMOS process, the high level of integration enables one of the industry's smallest Bluetooth baseband footprints at  $6 \times 6 \text{ mm}^2$ , while increasing performance and cost savings by eliminating external memory requirements. The controller provides point-to-point transmissions in the initial release, with point-to-multipoint capabilities planned for later releases.”  
[emphasis added]

Single chip transceivers for radios, such as 802.11 and Bluetooth, were also well known at the time of the invention. Their small footprint and low-power would be well known to one of ordinary skill in the art at the time of the invention.

With respect to claim 24, the examiner requested clarification of when the device could end up. If the examiner means are there limitations on movement of the device implied by the specification or claims, the applicants note that the first device location is not constricted by the specification or claims.

Further to the claims in question, the MPEP states:

“All that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. Further the scope of enablement must only bear a reasonable correlation to the scope of the claims. See, e.g., *In re Fisher*, 437 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970).” MPEP 2164.08

The MPEP also states:

“The presence of inoperative embodiments within the scope of a claim does not necessarily render a claim nonenabled. The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be

inoperative or operative with expenditure of no more effort than is normally required in the art. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1577, 224 USPQ 409, 414 (Fed. Cir. 1984) (prophetic examples do not make the disclosure nonenabling). MPEP 2164.08(b)

The current disclosure enables one of ordinary skill at the time of the invention to make and practice the claimed apparatus and methods. If the scope of a claim encompassed an embodiment that had not been reduced to actual practice at the time of the invention it would have been determinable to one of ordinary skill what those were without an extraordinary expenditure of effort. The applicants state that the rejection of claims 9, 24, 28, 29, 37, and 59 under 35 U.S.C. § 112 first paragraph is inappropriate based on the above and that the rejection of these claims should be removed.

#### **SECTION 112 SECOND PARAGRAPH REJECTIONS**

Claims 1-59 were rejected as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which application regards as the invention. The applicants respectfully traverse.

Specifically, the examiner requested clarification of the term “automatically self-positioning.” The applicants propose that the ordinary definition of the term is sufficient. According to the American Heritage Dictionary, 4<sup>th</sup> Edition, positioning means “to determine the position of” or “locate”. Self, in this sense, means “automatically: self-loading.” Self-positioning, then, means to self-locate. The specification at paragraph 36 states “each self-positioning transceiver T generally include a mobility mechanism 201 that permits the self-positioning transceiver T to adjust its own position as necessary to create and/or maintain a particular communication link.” Paragraphs 38-40 describe the self-positioning wireless transceiver. At a minimum, paragraphs 42-47, 49 and the descriptions of figures 9 and 10 in pp 50-62 describe the techniques and strategies employable to develop and maintain the claimed wireless communication path. Note the following quotations from the specification.

Paragraph 41 recites, in part, “The self-positioning transceivers T may all be deployed at once by a user or automatically by a system as required to create and/or maintain desired communication links between source devices 102 and destination devices 104.”

Paragraph 43 recites, in part, “[m]ore specifically, in the illustrated example, one of the self-positioning transceivers T2 assumes a position within communication range of the source device 102 as a second self-positioning transceiver T1 moves along a generally vertical axis A1 searching for a communication signal from the destination device 104 while maintaining a communication link with self-positioning transceiver T2.”

Paragraph 44 recites, in part, “[a] subset of the deployed self-positioning transceivers T4, T3, T2, T1 establish a primary communication link between the source device 102 and the destination device 104. A subset of the remaining self-positioning transceivers T9, T8, T7, T6, T5 create one or more alternate communication paths between the source device 102 and the destination device 104.”

Paragraph 56 recites in part, “[i]f the received signal strength from the destination device 104 is determined to be less than the predefined threshold, the self-positioning wireless transceiver system 100 is deployed at step 1006.”

Specifically, with respect to claims 15, 18, 27, 50, 53, and 58, the examiner requested clarification of the operating environment expressing a concern for variations in propagation due to obstacles and multi-path. Paragraph 38 recites in part, “...to identify adjustments to the positions of the self-positioning transceivers T1, T2, T3 relative to neighboring self-positioning transceivers T1, T2, T3, the source device 102 and/or the destination device 104 based on signals received from such devices via the positioning module 212 in an attempt *to optimize the quality of communication links* between such devices” [emphasis added]. Paragraph 45 recites in part, “As the source device 102 and the destination device 104 move with respect to each other, the self-positioning transceivers T1-T9 automatically reposition themselves with respect to each other to maintain a fairly uniform distribution of self-positioning transceivers T1-T9 *based on the quality of individual communication links* between neighboring self-positioning transceivers T1-T9” [emphasis added]. The examiner should not read into the description that equal position with respect to

the quality of the communication link means equal geographic spacing or even that each self-positioning transceiver has the same characteristics. The claims at issue recite, in part, positioning based on quality of the communication link, and is well supported in the specification as discussed above. Therefore the claims are definite with respect to operating characteristics and environment. The rejection of claims 15, 18, 27, 50, 53, 58 and dependent claim 54, under 35 U.S.C. § 112 second paragraph should be lifted.

Claim 20 recites, in part, “identifying a relatively shorter communication path defined by a subset of the plurality of self-positioning transceivers...” Per the definitions in the MPEP 2173.05(b), the use of the term ‘relatively’ is neither vague nor indefinite since it refers to a selection having a shorter communication path defined by an existing, finite subset of the plurality of self-positioning receivers and is not relative to a prior art reference or some other undefined measure. Refer to Figure 16. The rejection under 35 U.S.C. § 112 second paragraph should be lifted.

Claims 7 and 40 were rejected as being indefinite for allegedly using trade names. The use of trade named products can render a claim indefinite, as, for example, in the case where a trade named chemical compound is used in formulating a claimed composition relying on the formulation of the trade named product at a given time. The protocol specifications listed in the claims are not trademarks reflecting a source of goods (see MPEP 2173.05(u)). They are industry standards carefully defining short range communication protocols. They were at the time of the invention, and remain, short range communication protocols and are unlikely to evolve into anything but short range communication protocols. The applicants contend that one of ordinary skill in the art would have full knowledge of, and would unequivocally know how to construct a communication system operating in accordance with the claimed communication protocols. This is true even should underlying operational characteristics of the standards vary somewhat. The fact is, the self-positioning transceiver could be constructed to operate in accordance with the given protocol and neither the operation nor the scope of the claimed invention change should the underlying standard be updated over time. The rejections under 35 U.S.C. § 112 second paragraph should be removed.

**SECTION 103(b) REJECTIONS**

Claims 1-15, 21, 25-28, 30-39, 41-52, and 58 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Pelech et al. (Pelech, U.S. Patent No. 6,243,585) in view of Campbell (Campbell, U.S. Patent No. 6,167,263); and rejected claim 20 as being unpatentable over Pelech in view of Campbell and further in view of Richetta et al. (Richetta, U.S. Patent No. 5,499,237). The applicants respectfully traverse and request reconsideration.

Claim 1 recites, “[a] method of establishing a wireless communication path between a first device and a second device, the method comprising the steps of: automatically positioning a self-positioning wireless transceiver system within communication range of a first device and a second device; establishing communicative coupling between the self-positioning wireless transceiver system and the first device; and establishing communicative coupling between the self-positioning wireless transceiver system and the second device while maintaining communicative coupling with the first device.”

The examiner admits that Pelech does not teach automatically positioning a self-positioning wireless transceiver system. Campbell teaches a flotilla of lighter-than-air platforms that drift around the world and maintain a separation with respect to each other, but not with respect to end-point devices. Campbell, at best, can temporarily communicate with a first device but cannot maintain a communication coupling with the first device because the platform is designed to “drift in a controlled manner” (Abstract). Because the flotilla of platforms are in constant movement (Col 4, lines 29-49), by nature they cannot be positioned within communication range of a first device, while maintaining communication coupling with the first device.

Neither Pelech nor Campbell discloses, teaches or suggests establishing communicative coupling between the self-positioning wireless transceiver system and the first device; and establishing communicative coupling between the self-positioning wireless transceiver system and the second device while maintaining communicative coupling with the first device. As the references, separately or in combination, do not teach all the limitations of claim 1, claim 1 and its associated dependent claims 2-24 are also allowable. For at least this reason, the applicants request the rejection be removed.

With respect to claim 25, the claim recites, in part, “each of the plurality of self-positioning transceivers automatically positioning itself to a position with respect to the

first device, the position having a static or dynamic characteristic based upon a mobile or stationary condition of the first device.” As discussed above with respect to claim 1, the examiner admits that Pelech does not teach automatically positioning transceivers.

Campbell’s flotilla of wind-driven platforms does not teach or suggest the position having a static or dynamic characteristic based upon a mobile or stationary condition of the first device. Neither Pelech nor Campbell nor the combination teaches all the limitations of claim 25. Therefore, claim 25 and its dependent claims 26-34 are allowable. For at least this reason, the applicants request the rejected be lifted.

Claim 35 recites, in part, “a third routine that issues a position command to the mobility mechanism based on the quality of a signal received by the receiver from the first device.” As discussed above, neither Pelech nor Campbell nor a combination thereof teaches or suggests positioning based on the quality of a signal received by the receiver from the first device. Pelech does not discuss the topic and Campbell teaches away from such a claim by disclosing that the lighter-than-air platforms drift on wind currents and are only positioned with respect to each other. Therefore, claim 35 is allowable and its respective dependent claims 36-49 are also allowable. For at least this reason, the applicants request the rejected be removed.

Regarding claim 50, the claim recites, in part, “automatically positioning a self-positioning wireless transceiver system, the self-positioning wireless transceiver system including first, second and third self-positioning wireless transceivers, relative to a first device.” The examiner admits that Pelech does not teach automatically self-positioning. As established above, Campbell does not teach automatically positioning relative to a first device, but rather positioning only relative to other lighter-than-air platforms. For at least this reason, the references taken separately or in combination do not teach or suggest all the limitations of claim 50 and the claim is allowable. For at least this reason, the applicants request the rejection of claim 50 be removed.

Claim 51 recites, in part, “automatically positioning a self-positioning wireless transceiver system, the self-positioning wireless transceiver system having first and second self-positioning transceivers, within communication range of a first device and a second device, such that the first self-positioning transceiver is within communication range of the first device.” The examiner admits that Pelech does not teach automatically positioning a



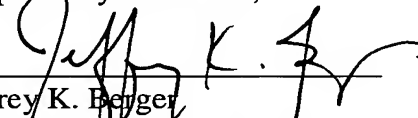
self-positioning wireless transceiver system. Campbell does not teach or suggest automatically positioning a self-positioning wireless transceiver system, the self-positioning wireless transceiver system such that the first self-positioning transceiver is within communication range of the first device. Since Pelech and Campbell do not teach or suggest all the limitations of claim 51, the claim is allowable, as is its dependent claim 52. For at least this reason, the applicants request the rejection of claims 51 and 52 under 35 U.S.C. § 103(a) be removed.

Claim 58 recites, in part, "each of a first subset of the plurality of self-positioning transceivers automatically positioning itself within communication range of the first device." As discussed above, the examiner admits that Pelech does not teach self-positioning transceivers at all. Campbell does not teach a self-positioning transceiver automatically positioning itself within communication range of the first device, but rather that the transceiver drifts on wind currents. Claim 58 is allowable since neither reference teaches or suggests all the limitations of the claim. For at least this reason, the applicants request the rejection of claims 58 under 35 U.S.C. § 103(a) be removed.

The applicants have addressed objections and rejections raised by the examiner by the above amendments and remarks. For at least the reasons given, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. No fees are believed due, but should one be required, the Commissioner is directed to Deposit Account 13-2855.

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Respectfully submitted,

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